In Reply Refer To:
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Office of Water Quality Technical Memorandum 2006.02

Subject: National Stream Quality Accounting Network, Fiscal Year (FY) 2006

This memorandum contains a summary of the activities of the National Stream Quality Accounting Network (NASQAN) for FY 2006, including the stations being operated, and constituents measured. Further details on NASQAN operations can be obtained from either the Office of Water Quality or the Basin Coordinators. Contact information is contained at the end of this memorandum.

FY 2006 will require some changes in NASQAN operations. The changes include: (1) the Yukon sampling was completed in September 2005 and no sampling will occur in FY 2006, and (2) two stations are discontinued in the Rio Grande Basin as they primarily only reflect reservoir release waters. The total number of samples expected for collection has been adjusted and are shown in Attachment 1.

NASQAN Stations

The stations to be operated this year are largely the same as FY 2005 with the changes noted above. We will continue to sample the Mississippi at Baton Rouge in connection with the St. Francisville station. The number of stations operated in each basin is shown in Table 1.

Table 1. Number of NASQAN stations by river basin.

Basin	*Number of Stations*
Mississippi	19
Rio Grande	6
Colorado	2
Columbia	1
Yukon	0
Total	28

Some stations in the Mississippi River Basin have a portion of their sample collections determined by calendar date (“fixed samples”) and a portion determined by hydrologic condition (“event samples”). Event samples are to be collected in consultation with the Basin Coordinator. Also for some stations, the number of event samples is lower this year than in FY 2005. Collection cost for fixed samples are paid at the beginning of the year. The cost of event samples is paid after sample collection in a secondary funding transfer in July. The initial transfers and event reserve amounts, by Water Science Center (WSC) and by account number, are contained in Attachment 2.

Constituents Measured

Constituents measured at NASQAN stations vary somewhat across the country depending on local conditions. Major ions and nutrients (including carbon species) are measured at all NASQAN stations. Both dissolved and sediment-associated trace elements were measured at many stations in the Colorado, Columbia, Mississippi, and Rio Grande basins during 1996-2000; sampling for these constituents continues only at stations that were not well sampled during this period, and at a subset of stations in these basin at a reduced frequency. Pesticides (NWQL Schedule 2001, 2010 at the MO WSC operated stations) are measured throughout the Mississippi and Rio Grande basins. Radiochemistry is measured in the Colorado Basin, and sampling should continue for the National Research Program.

Please insure that all field personnel sampling at NASQAN stations have a copy of Attachment 3, which provides specific information on sample collection and processing in FY 2006.

NASQAN Basins

Mississippi Basin

The water-quality issues in the Mississippi River Basin continue to be connected to the Gulf of Mexico Hypoxia concerns. NASQAN will continue in FY 2006 to compute loads of nutrients delivered to the Gulf and moving down the Mississippi. Some scientists connect the increase in nitrogen being discharged from the Mississippi River over the past 50 years to the growth and severity of these hypoxic waters. Although, the NASQAN Program will not answer the question of whether the increased nitrogen exacerbates the hypoxic waters, the program with its flux-based approach will provide information on source areas for nutrients and document any changes in the transport of nutrients that might occur in an effort to control the hypoxic zone.

During FY 2006, we will continue to operate the site at Baton Rouge, LA, so we can eventually transition from the historical location at St. Francisville, LA, to a new gage at Baton Rouge, LA that will include real-time water-quality monitoring. We will also continue to process samples from the Mississippi River at Grafton, where sampling costs are provided from another agency, and NASQAN will get 12 samples this year.

Rio Grande Basin

The Rio Grande Basin will continue to collect data from six (6) of the stations monitored in FY 2005. Two stations down stream of large reservoirs (below Amistad and Falcon Dams) will not be monitored as waters at these sites reflect reservoir release decisions in contrast to river transport. The goal of the fixed-network is to continue to collect samples using a flux-based approach over a range in stage. Sampling will be done on a routine basis at the six (6) stations located in the middle and lower portions of the Rio Grande watershed because of infrequent storm events in the basin. Although sampling is planned on a regular basis, efforts will be made to sample at higher stages and during storm events if they occur.

Yukon Basin

FY 2006 all sampling in the Yukon River NASQAN study has been completed and no sampling will occur in FY 2006. However, NASQAN will fund the following Yukon activities: (1) QA/QC of water-quality data collected in FY 2005 for inclusion in the 2005 annual data report and NWISWEB, (2) removal of boat and equipment from Porcupine River, (3) complete and

update Yukon River web page, (4) complete GIS database, (5) assist the PARTNERS to collect 2 samples at the Yukon River at Pilot Station, and (6) report writing by both the WSC and the National Research Program.

Columbia Basin

The scope of the NASQAN Program in the Columbia River Basin for the period 2001-2006 is much reduced relative to 1996-2000, with sampling at only one index station, the Columbia River at Beaver Army Terminal near Quincy, Oregon (14246900). Sampling at this station continues to be oriented toward the primary NASQAN Program objective of characterizing fluxes of water and chemicals out of the basin to receiving waters, i.e., the Columbia River Estuary.

Colorado Basin

Two index stations will be operated in the Colorado Basin (Colorado River above Diamond Creek and Colorado River at Northerly International Boundary), the same as last year. Sampling at the compact point (Colorado River at Lees Ferry) is supported through the Cooperative Water Program.

NASQAN Contact Information

For any questions on the NASQAN Program, consult our web page (http://water.usgs.gov/nasqan) or contact any of the following individuals:

- Office of Water Quality, Reston, VA. tlmiller@usgs.gov, 703-648-6868
- Mississippi Basin Coordinator: Richard Coupe, MS WSC, Pearl, MS. rhcoupe@usgs.gov; 601-933-2982
- Rio Grande Basin Coordinator: Becky Lambert, TX WSC, San Antonio, TX. blambert@usgs.gov; 210-691-9218
- Colorado Basin Coordinator: Bob Hart, AZ WSC, Tucson, AZ. bhart@usgs.gov; 520-556-7137
- Columbia Basin Coordinator: Jennifer Morace, OR WSC, Portland, OR. jlmorace@usgs.gov, 503-251-3229
- Yukon Basin Coordinator: Tim Brabets, AK WSC, Anchorage, AK. tbrabets@usgs.gov; 907-786-7105

Timothy L. Miller
Chief, Office of Water Quality

This memorandum supersedes OWQ Technical Memorandum 2005.01.

Distribution: A, B, DC, AO, WSC and Regional Water-Quality Specialists, Basin Coordinators

Attachment 1. FY 2005 NASQAN Stations

Station ID	Name	WSC	Fixed Samples	Planned Event	Replicates	Sediment Chemistry
		Mississippi Basin				
03086000	Ohio R @ Sewickley, PA	PA	11	2	1	0
03216600	Ohio R @Greenup Dam	KY	11	2	1	0
03303280	Ohio R @Cannelton	KY	11	2	1	0
03378500	Wabash R @ New Harmony	KY	11	3	2	0
03438500	Cumberland R@ Smithland	KY	5	0	1	4
03609750	Tennessee R @ Paducah	KY	5	0	1	0
03612500	Ohio R nr Gr. Chain	KY	11	3	2	5
05420500	Mississippi R @ Clinton	IA	9	3	2	5
05587455	Mississippi R blw Grafton	MO	12	0	1	0
06185500	Missouri R nr Culbertson	MT	6	0	1	0
06338490	Missouri R @ Garrison Dam	ND	5	0	1	0
06467500	Missouri R @ Yankton	SD	7	0	1	0
06610000	Missouri R @ Omaha	IA	11	3	2	0
06934500	Missouri R @ Hermann	MO	11	3	2	5
07022000	Mississippi R @Thebes	MO	11	3	2	5
07263620	Ark. R @ D.Terry Dam	AR	9	0	1	0
07373420	Mississippi R @ St. Francisville	LA	11	3	2	6
07374000	Mississippi R @ Baton Rouge	LA	11	3	2	6
07381495	Atchafalaya R @ Melville	LA	11	3	2	6
		Rio Grande Basin				
08374200	Rio Grande blw Presidio	TX	7	0	1	6
08377200	Rio Grande @ Foster Ranch	TX	7	0	1	6
08447410	Pecos R. nr. Langtry	TX	7	0	1	0
08450900	Rio G. blw Amistad Res	TX	0	0	0	0
08459200	Rio Grande @ Laredo	TX	7	0	1	6
08461300	Rio Grande blw Falcon Dam	TX	0	0	0	0
08470400	Arroyo Colorado nr Harlingen	TX	7	0	1	6
08475000	Rio Grande nr Brownsville	TX	7	0	1	0
		Colorado Basin				
09404200	Colorado R @ Diamond CK	AZ	7	0	1	0
09522000	Colorado R @ NIB	AZ	5	0	1	0
		Columbia Basin				
14246900	Columbia R @ Beaver Army	OR	7	0	2	3
		Yukon Basin				
15356000	Yukon R @ Eagle	AK	0	0	0	0
15389000	Porcupine R nr Ft Yukon	AK	0	0	0	0
15453500	Yukon R @ Stevens Village	AK	0	0	0	0
15515500	Tanana R @ Nenana	AK	0	0	0	0
15565447	Yukon R @ Pilot Station	AK	0	0	0	0

Attachment 2. FY 2006 Funding Allocations by WSC and Account Number
For sampling and stream gaging costs only

Account Number	WSC	Fixed Sampling Cost	Gaging Cost	Event Sampling Reserve
2419APB	KY	$ 245,050	$ 24,950	$ 43,665
2476ACR	PA	$ 33,990	$ -	$ 6,180
85789M4	AR	$ 35,280	$ 4,940	$ -
485919MU	IA	$ 81,895	$ -	$ 24,615
8601AEE	LA	$ 153,120	$ -	$ 41,760
86119CS	MO	$ 111,980	$ -	$ 30,540
86119CS	MO	$ 6,240	Grafton	
8620A10	MT	$ 21,870	$ -	$ -
8638AGN	ND	$ 16,075	$ -	$ -
86489QM	SD	$ 39,095	$ 965	$ -
8653AGS	TX	$ 142,310	$ -	$ -
96719ES	AZ	$ 45,595	$ -	$ -
97119H2	OR	$ 41,180	$ -	$ -

Attachment 3. FY 2006 NASQAN Operations

In general, the sampling strategies remain unchanged from previous years. The cost of event samples will be determined in July and provided as a separate allocation if sampling warrants. Electronic copies of guidelines for all sampling procedures are available through the NASQAN homepage http://water.usgs.gov/nasqan. The web page provides technical support for field crews; i.e., sampling and processing protocols for routine and QC samples, sample coding guidelines, and descriptions of NASQAN laboratory schedules.

NASQAN maintains a secondary level of data review, based on national data-quality objectives, that complements the WSC data review process. WSC personnel are responsible for data review, rerun requests, and timely responses to contamination problems and other data issues. The national data review process provides a means to track the review status of questionable data, to receive input from the WSCs to the national database via interactive web forms, and to provide technical support toward resolving data-quality issues. Information on the national data review process, including criteria definitions, instructions, and the individual station pages can be accessed from the following URL: http://oregon.usgs.gov/uo/nasqan/qa.req.html.

Quality-Control Samples

The specific types of QC samples to be collected at each NASQAN station are described in the sampling strategies provided by the Basin Coordinators. Additionally, laboratory equipment blanks must be analyzed once per year for all equipment that is used to collect and process NASQAN samples. Guidelines for collection, processing, and coding of QC samples are provided on the NASQAN homepage. Please carefully follow the coding instructions for all QC samples. Consistency across the network is necessary for efficient analysis of the QC data.

Laboratory Information

Basin Accounts

The following basin accounts have been established for analysis of NASQAN chemistry and suspended sediment samples:

Colorado Basin 4565-9CE20
Columbia Basin 4565-9CE30
Mississippi Basin 4565-9CE40
Rio Grande Basin 4565-9CE50

Please use the appropriate account number on your Analytical Service Request (ASR) and sediment analysis request for all NASQAN samples.

Laboratory Schedules

Laboratory schedules for analysis of NASQAN samples at the National Water Quality Laboratory (NWQL) are listed below. There are several choices for routine analyses of both nutrient and major ions, depending upon expected concentrations; however, we do not expect changes from last year. **Please select the appropriate schedule for your stations to avoid nondetects.** If you have questions about this issue, think the schedule should change from past years, please contact your Basin Coordinator first.

Schedule
997 Nutrients, particulate carbon, nitrogen, organic carbon
1010 Nutrients (low-level ortho-P), particulate carbon, nitrogen, organic carbon
1069 Nutrients (low-level P and N), particulate carbon, nitrogen, organic carbon
998 Major ions and miscellaneous trace elements (conductance < 2000)
1201 Major ions and miscellaneous trace elements (conductance > 2000)
1050 Trace elements analyzed by ICP/MS

2001 Pesticides in filtered water, extracted by NWQL
2010 Pesticides in filtered water, field extracted
1637 Chlorophyll-a and phaeophytin
452 Nutrient blank
1675 Organic carbon blank
1674 Routine major ion and trace element blank
1673 Expanded trace element blank
1898 Particulate carbon & nitrogen, DOC, UV organics—ONLY Grafton
Updated information from the NWQL on sample requirements can be obtained from the Technical Support section of the NASQAN home page.

Sediment Laboratories
Sediment samples from all stations within a single basin should be submitted to one of two central sediment laboratories, described below. A single composite sample will be submitted for each station sample. This is a change from 2003 when duplicate sediment samples were collected. Samples may be composited in the field before being sent to the sediment laboratory.

Iowa WSC Sediment Laboratory:
Mississippi Basin
Rio Grande Basin
Cascade Volcanic Observatory:
Colorado Basin
Columbia Basin

Trace element sampling
Sampling for trace elements, both dissolved (schedule 1050) and suspended (large-volume sample for Art Horowitz) will be maintained at a subset of stations (Attachment 1). Sampling crews should be reminded that every effort must be made to collect enough water to accumulate at least 1 gram of sediment when processed. Art's laboratory sends email back after analysis to inform the crews how much sediment was in the previous sample. This should be used as a guide, along with knowledge of the site, to determine how much water needs to be collected each trip. Please make sure that all samples submitted are accompanied by an email to Art's laboratory to let them know the sample is coming.

Isotope samples
Field crews at all NASQAN stations should continue to collect filtered aliquots from the composite water sample for analysis of stable isotopes of water. These samples should be packaged securely and sent directly to Ty Coplen for analysis. He supplies the 60-mL glass bottles for sample collection. Information on the specific sampling and processing protocols, and the address for mailing those sampling can be found on the NASQAN homepage.

Additionally, crews should collect two filters for analysis of stable isotopes in particulate organic matter (POM): the glass fiber filter from filtration of pesticide samples, and a separate glass fiber filter from the filtration of particulate carbon/nitrogen. These filters should be clearly labeled and stored in the freezer; approximately quarterly, these filters should be sent to Carol Kendall. ***For stations in the Mississippi Basin only***: an additional filtered sample will be collected and sent to Carol Kendall with the POM filters described above. The sample is filtered through the 0.45 capsule filter into two 20 mL scintillation vials, which will be provided by the Basin Coordinator (Richard Coupe). After filtering, the sample should be clearly labeled and frozen as soon as possible. Further details on the collection and mailing of these samples can be found on the NASQAN homepage.